GEORGIA INSTITUTE OF TECHNOLOGY
OFFICE OF CONTRACT ADMINISTRATION
SPONSORED PROJECT INITIATION

Date: 11/20/80

Project Title: Steady-State Finite - Dimensional Discrete - Time Stochastic Control

Project No: E-24-618

Project Director: Dr. L. K. Platzman

Sponsor: National Science Foundation; Washington, D. C. 20550

Agreement Period: From 8/15/80 Until 4/30/82
(Includes usual six (6) month unfunded flexibility period)

Type Agreement: Grant No. ECS-8020687

Amount: $16,641 NSF
3,243 GIT (E-24-343)
$19,884 TOTAL

Reports Required: Annual Progress Report; Final Project Report

Sponsor Contact Person (s):

Technical Matters

Mr. Abraham H. Haddad
NSF Program Officer
Systems Theory and Operations Research
Division of Electrical, Computer, and
Systems Engineering
Directorate for Engineering and Applied Science

National Science Foundation
Washington, D. C. 20550
202/357-9618

Contractual Matters
(thru OCA)

Mr. William A. Bryant
NSF Grants Official
Section II
AAEO/EAS Branch

Division of Grants and Contracts
Directorate for Administration
National Science Foundation
Washington, D. C. 20550
202/357-9602

Defense Priority Rating: None

Assigned to: Industrial and Systems Engineering (School/~~Laboratory~~)

COPIES TO:

- Project Director
- Division Chief (EES)
- School/Laboratory Director
- Dean/Director—EES
- Accounting Office
- Procurement Office
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- ✓ Reports Coordinator (OCA)
- Library, Technical Reports Section
- EES Information Office
- EES Reports & Procedures
- Project File (OCA)
- Project Code (GTRI)
- Other OCA Research Property Coordinator

CA—3 (3/76)

GEORGIA INSTITUTE OF TECHNOLOGY OFFICE OF CONTRACT ADMINISTRATION

SPONSORED PROJECT TERMINATION SHEET

Date 6/29/83

Project Title: Steady-State Finite-Dimensional Discrete-Time Stochastic Control

Project No: E-24-618

Project Director: Dr. Loren K. Platzman

Sponsor: National Science Foundation

Effective Termination Date: 4/30/82

Clearance of Accounting Charges: 4/30/82

Grant/Contract Closeout Actions Remaining:

- [ ] Final Invoice and Closing Documents
- [X] Final ~~Fiscal~~ Accounting Report (FCTR)
- [X] Final Report of Inventions
- [X] Govt. Property Inventory & Related Certificate
- [ ] Classified Material Certificate
- [ ] Other _____

Assigned to: Industrial Systems Engineering (School/~~Laboratory~~)

COPIES TO:

Administrative Coordinator	Research Security Services	EES Public Relations (2)
Research Property Management	Reports Coordinator (OCA) ✓	Computer Input
Accounting	Legal Services (OCA)	Project File
Procurement/EES Supply Services	Library	Other Platzman

E-24-618

NATIONAL SCIENCE FOUNDATION
Washington, D.C. 20550

FINAL PROJECT REPORT
NSF FORM 98A

PLEASE READ INSTRUCTIONS ON REVERSE BEFORE COMPLETING

PART I–PROJECT IDENTIFICATION INFORMATION

1. Institution and Address	2. NSF Program	3. NSF Award Number
Georgia Institute of Technology Atlanta, GA 30332	Systems Theory and O.R.	ECS 8020687
	4. Award Period From 8/15/80 To 4/30/82	5. Cumulative Award Amount 16,641

6. Project Title: Steady-State Finite-Dimensional-Discrete-Time Stochastic Control

PART II–SUMMARY OF COMPLETED PROJECT *(FOR PUBLIC USE)*

Stochastic control theory is now routinely used to regulate aircraft, chemical processes, and other continuous-state man-made systems. Discrete-state problems have not enjoyed the same success. These problems include:

- Dynamic routing systems (automated warehouses and product distribution, communication networks)
- Repair and replacement systems
- Quality control sampling strategies
- Emergency vehicle dispatching

This research is an essential first step to obtaining practical algorithms for such problems, We have obtained two important results: (1) a fast algorithm to solve partially-observed Markov decision problems by finite-element approximations, and (2) identification of a class of well-structured problems that include the well-known continuous-state problems as well as the new discrete-state problems that are of more current interest.

PART III–TECHNICAL INFORMATION *(FOR PROGRAM MANAGEMENT USES)*

1. ITEM *(Check appropriate blocks)*	NONE	ATTACHED	PREVIOUSLY FURNISHED	TO BE FURNISHED SEPARATELY TO PROGRAM	
				Check (✓)	Approx. Date
a. Abstracts of Theses	X				
b. Publication Citations		X			
c. Data on Scientific Collaborators	X				
d. Information on Inventions	X				
e. Technical Description of Project and Results					
f. Other *(specify)*					

2. Principal Investigator/Project Director Name *(Typed)*	3. Principal Investigator/Project Director Signature	4. Date
Loren Platzman		5/16/83

NSF Form 98A (5-78) Supersedes All Previous Editions

Form Approved OMB No. 3145-0058

Publication Citations

J. Santana and L. Platzman, "Real Time Scheduling of an Open-Warehouse Sorter-Palletizer System", 18th IEEE Conference on Decision and Control, Fort Lauderdale, Florida, December 1979.

L. Platzman, "Feasible Algorithms for Finite-State Infinite-Horizon Partially-Observed Markov Decision Processes", submitted to Operations Research.

L. Platzman, "A Class of Unimodal Control Systems", to be submitted to IEEE Transactions on Automatic Control.